#### **Lesson Two**

Objective Match: Timeline:
The Physical Setting: California and Beyond All Periods

#### THE SEACOAST OF CALIFORNIA

The geography of California is the stage on which our history has unfolded. It has had a strong influence on how we live and how we make a living. We can see evidence of this to the present day.

Our Pacific Coast, and its features, have been one of the most important geographical factors shaping our state.

**Purpose:** Students will have an opportunity to explore the physical setting of the California and discuss its link to the history of the state with the use of hands-on activities.

#### What students will do:

- Students will create an illustrated poster glossary of geographic terms related to the coast.
- Students will learn to identify these features on local maps, maps of California and North America
- Using sand and water in shallow trays, students will build models of a coastline.

# What you should do:

California is a sea state. To prove it to yourself and your class find a detailed map of North America. Now make a list of all the major cities of the West Coast (don't be shy, include those outside the state if you'd like). Then make a separate list of the most sheltered harbors on the coast (those which could harbor large ships away from the wind and waves of the open ocean). With very few exceptions the lists should coincide. Major metropolitan areas developed only where there is a deep safe harbor. You see, we are still living with the legacy of our maritime era.

However, the West Coast is for the most part an open and exposed shoreline with few safe harbors. Other influential features of the coast affecting shipping are **capes** or **points**. Two features we will consider are prevailing winds and ocean currents.

Some of these features are less influential today because marine engines allow ships and boats to navigate their routes with passing concern for these factors. The story was very different throughout the age of sail. With ships and boats being powered solely by the wind, vessels were at the mercy of the weather conditions and the geography of the areas they traveled.

The winds off our coast blow fairly consistent from one direction. These consistent winds are called **trade winds**. Sail ships would travel to areas of favorable **trade winds** (those blowing in the direction of travel) before crossing the ocean.

In Northern California we have northwesterlies (named after the direction from which they are blowing). On any given day if you are on the beach and look out to sea and slightly to the north the wind will be hitting you directly in the face.

This also means the West Coast is a **lee shore**. Sailors dreaded lee shores because if weather conditions took a turn for the worse and your ship was close to shore a sail ship would be in certain danger. With strong storm winds the ship would be **set** (moved) toward shore more than it would be making **headway** (traveling in the direction of your course), and hence it was likely that it would end up on the beach (or, worse, on the rocks). The only thing to do in such a situation was to sail into protected waters (from wind and the seas) such as a **bay** or **harbor**; something in short supply along the entire West Coast of North America.

Capes (sometimes called headlands) are not only potential hazards to ships traveling along the coast they often marked an area of major change in wind direction and current flow. This is the case at Point Conception on the Santa Barbara coast. South of the point the California shoreline trends more to the east. This point marks a major shift in wind direction, while the influence of the offshore current is diminished. Capes are also prominent landmarks aiding navigation. For this reason, and in order to keep ships from running into them, many major capes have lighthouses on them.

### **Activity 1:** An Illustrated Glossary of Geographic Terms

### Materials:

sentence strips, large blank paper (11" x 17"), bulletin board, dictionaries, an encyclopedia, books about geography, a variety of maps, colored pencils, construction paper

Begin a discussion with your students about what these geographical features are: bays, harbors, points, and capes. Make a list of what students know about each term. Explain to students that in order to fill in the picture on these and other geographic features the class will create a bulletin board illustrated glossary.

Divide the class into small cooperative learning groups (4-5 students). Assign one term per group. Students should use a variety of sources to arrive at a definition. These may include dictionaries, encyclopedias, books on geography, and maps. Place names offen include the use of these terms (San Francisco *Bay*, *Cape* Mendocino, *Point* Arena, etc.).

Have students write out their definitions on sentence strips and draw an illustration of the term. Use illustrated entries in a dictionary to give students an idea on how to proceed.

When groups have completed their illustrated definition, have each group report to the rest of the class.

Now students plan and create an illustrated bulletin board glossary of the these terms. This can be done by drawing a large coastline with an example of each of the features included beginning with the four mentioned above (for reference you may use the illustrated glossary in the Houghton Mifflin Social Studies Text "Oh, California," page 333). Use the sentence strips and their illustrations as the basis for the bulletin board.

As you continue your exploration of California, you may want to add other important geographical features to this glossary.

Extension: Play "feature bingo"

Using the feature blocks create different bingo cards suing a copier. Make a set of feature pieces for calling out. Allow students to color their bingo cards, and laminate them and the game pieces to make them last.

# **Activity 2**: What do these features look like on a map?

### Materials:

a variety of maps of your area, California, North America, and the World, post-it notes, and yarn, poster board or large cardboard, graph paper

Using the illustrated glossary and the physical map as reference ask students to find all the major bays, harbors, capes, and points along the West Coast of North America.

Along California's coast they should note (from South to North:) San Diego Bay, San Pedro harbor, Point Conception, Monterey Bay, San Francisco Bay, Point Reyes, Drakes Estero, Tomales Bay, Cape Mendocino, and Humboldt Bay

Mount the maps being used on a posterboard or large cardboard and have students label the feature on the map by type. Using maps which show cities prominently, ask students to list all major metropolitan areas of California.

"How many of these were built in an area with a good harbor?"

Now have students graph this information using a Venn diagram or bar graph. The strong link between harbors and major urban center in California should be noted in your discussions.

Extension: Bays and Capes Around the World Have students find and list major coastal features on a world map. What are the major bays of a given continent?

# Activity 3: Making a Physical Model of a Harbor

### *Materials:*

shallow baking trays (9" x 14"), clean sand, dried leaves, plastic straws, water

Divide the class into 4 to 5 cooperative learning groups. Each group will have one tray, some sand, some dry leaves, a drinking straw for each student, and a

container with water. Ask students to create a physical model of a straight coast. Have them break small pieces of dry leaves and place them on the water. The pieces simulate ships.

Explain that off the coast of California winds blow mostly from off shore. Have the students take turns softly blowing on the water from the low angle simulating the wind.

"What do you see?"
(They should see small waves created by blowing .)

"What happens with your little ship?"

Now have them make an indention in the coast with a narrow strait creating a bay. Have the students now blow on the ocean side of the model again. Explain that the land surrounding the bay would shelter the bay from the strong wind and waves of the open ocean.

"Do you notice a difference."

Have students place a piece of the leaf out on the ocean side and one inside the harbor. Once again have a student gently blow through the straw on the ocean side of the model.

"Do you notice any difference between your ships when you create wind and waves?"

#### Sea Journal:

After discussing the importance of safe harbors, have students record their observation in the Sea Journal and illustrate them.

# **Activity 4:** Capes and Points

### Materials:

shallow baking trays, clean sand, dried leaves, plastic straws, water

Have students now create a physical model of a section of the coast with a sharp outward bend along the shore. This geographical feature is called a cape or a point (as reference use a map of the California coast and examine Point Conception at Santa Barbara) have students place pieces of dry leaf 'north' and 'south' of the cape. Now have a student blow gently either north or south long the coast.

"Is there a difference in how the wind affects your ships?"
Explain that capes and points are often places where the wind and current change drastically.

"How would that affect a ship that used only the wind to move?"

### Sea Journal:

After discussing the influence of capes on ocean travel, have students record their observations in their Sea Journals and illustrate them.

Extension: Coastline Models Center

During the week you could preserve the physical models of one of each of the feature built. Set them up in a center allowing students to explore them further.

Extension: Storm Story

You might also use them as a prompt to write a story of a storm at sea. What would it be like to be a sail ship during a storm out at sea? Now imagine being a crew member on ship inside a harbor during a storm. Write an imaginary story about these two events.